Date: Wed, 13 Apr 94 04:30:48 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V94 #96
To: Ham-Homebrew

Ham-Homebrew Digest Wed, 13 Apr 94 Volume 94 : Issue 96

Today's Topics:

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: 12 Apr 1994 15:00:52 GMT
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!news.intercon.com!panix!
news.columbia.edu!ciao.cc.columbia.edu!mac20@network.ucsd.edu
Subject: Directly plotting etch-resist on PC boards?
To: ham-homebrew@ucsd.edu

I don't happen to have the information in front of me but i noticed,
and bought, an interesting item from Digikey the other month.
it's something called the Toner Transfer System which consists of
specially formulated sheets to laser-print onto and then iron onto a
pc board for immediate etching. i have not had the chance to actually
try this yet but they did seem to readily achieve double traces
through 100mil through holes.

it also contains instructions that mention various fine points
including carefully ironing (pretty big iron to compensate for large
heat sinking of copper clad board) and "super-charged" toner
cartridges that they highly recommend.

they also sell various pieces of equipment such as a highly modified lamenating machine that does the ironing for you. not too cheap though.

i'll get the name, # etc. later but try your digi-key catalog near the homebrewing section of course.

Mike Cecere KF2NV
Applied Physics Department
Columbia University

Date: 12 Apr 1994 08:13:46 GMT
From: ihnp4.ucsd.edu!usc!cs.utexas.edu!swrinde!emory!europa.eng.gtefsd.com!paladin.american.edu!hookup!news2.sprintlink.net!news.sprintlink.net!indirect.com!nike@network.ucsd.edu
Subject: Green Card Lottery- Final One?
To: ham-homebrew@ucsd.edu

Green Card Lottery 1994 May Be The Last One!
THE DEADLINE HAS BEEN ANNOUNCED.

The Green Card Lottery is a completely legal program giving away a certain annual allotment of Green Cards to persons born in certain countries. The lottery program was scheduled to continue on a permanent basis. However, recently, Senator Alan J Simpson introduced a bill into the U. S. Congress which could end any future lotteries. THE 1994 LOTTERY IS SCHEDULED TO TAKE PLACE SOON, BUT IT MAY BE THE VERY LAST ONE.

PERSONS BORN IN MOST COUNTRIES QUALIFY, MANY FOR FIRST TIME.

The only countries NOT qualifying are: Mexico; India; P.R. China; Taiwan, Philippines, North Korea, Canada, United Kingdom (except Northern Ireland), Jamaica, Domican Republic, El Salvador and Vietnam.

Lottery registration will take place soon. 55,000 Green Cards will be given to those who register correctly. NO JOB IS REQUIRED.

THERE IS A STRICT JUNE DEADLINE. THE TIME TO START IS NOW!!

For FREE information via Email, send request to cslaw@indirect.com

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Canter & Siegel, Immigration Attorneys
3333 E Camelback Road, Ste 250, Phoenix AZ 85018 USA
cslaw@indirect.com   telephone (602)661-3911 Fax (602) 451-7617

Date: 12 Apr 1994 08:48:03 -0400
From: hp81.prod.aol.net!search01.news.aol.com!not-for-mail@uunet.uu.net
Subject: MRF 472 Device Data
To: ham-homebrew@ucsd.edu

Does anyone have detailed device data bout this discontinued RF amplifier? I would appreciate internal capacitance ratings, FT, and max voltage and current values. Thanks much

73, de JimN0OCT

Date: 12 Apr 1994 07:53:02 -0400
From: hp81.prod.aol.net!search01.news.aol.com!not-for-mail@uunet.uu.net
Subject: Small (1-5 watt?) AM transmitter.
To: ham-homebrew@ucsd.edu

In article <L50Jkc1w165w@valinor.mythical.com>, timg@valinor.mythical.com (Tim Gross) writes:

>so here's the info also there is a newsletter out of berkley
>ie FRB - Free Radio Berkley they sell kits and amps also etc etc..

I would like information on how to get ahold of a copy of this newsletter--please email the info, if you could. Thanks!

73 de JimN0OCT

Date: 12 Apr 94 21:32:18 GMT
From: pa.dec.com!nntpd.lkg.dec.com!nntpd.bb.dec.com!waf@decwrl.dec.com
Subject: Small (1-5 watt?) AM transmitter.clo
To: ham-homebrew@ucsd.edu

You all know that you need the landlord's (university's)
permission to run a carrier current station, don't you?
--
Bill Freeman, waf@zk3.dec.com, KE1G, PP-SMEL-IA(ME VFR only) N4365Z
USABDA, MassABDA (novice modern), NMRA, rounds, squares, bad jokes.
Telemarketing: Do more than just say no, write saying you seek other vendors.

Date: 12 Apr 1994 18:54:38 +0100
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!howland.reston.ans.net!pipex!uknet!
acorn!not-for-mail@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <1994Apr8.143042.11376@ke4zv.atl.ga.us>,
<2o3vd1$f7h@acorn.acorn.co.uk>, <1994Apr9.153927.8548@vlsi.polymtl.ca>
Subject : Re: Directly plotting etch-resist on PC boards?

In article <1994Apr9.153927.8548@vlsi.polymtl.ca> nick@vlsi.polymtl.ca (nick
ciarallo) writes:
>
>The way we make test PCBs at work is rather simple and more importantly, QUICK.
>We draw the pcb artwork using AutoCad (I mostly design microwave stuff) and
>then send the file to the laser printer at 1:1. I load the laser with a sheet
>of clear acetate and let the printer do it's thing. Bingo, I have a film

etc ..

Yes, I appreciate this is a popular and reasonably successful method.
The plot-on-PCB scheme, though, is deliberately intended to (a) use a cheap
second-hand plotter instead of an expensive modern laser printer, and (b)
avoid the photographic stage. As Gary said, it would be even better to
avoid the etch stage too.

It isn't necessarily the best system, and if you have a laser printer
and no plotter, it may well be better to use that. Homebrew (IMHO) is all
about doing it with what's in the garage or the junk sale, rather than
buying anything new ! Extra points if you don't have to rely on the
goodwill of your employers, too.

Having said that, I've tried making artworks on a laser printer and
had mixed success - the lines came out 'fluffy' and with holes in them,
as though the toner had shrunk together through surface tension. I
think this is a problem with the mobility of toner particles on plastic
film as opposed to paper, and suspect that some toner/printer/film
combinations work better than others. I'd be interested to know
what works best.

-adrian

Date: 13 Apr 1994 00:28:22 +0300
From: ihnp4.ucsd.edu!galaxy.ucr.edu!library.ucla.edu!europa.eng.gtefsd.com!
howland.reston.ans.net!pipex!sunic!news.funet.fi!news.cc.tut.fi!proffa.cc.tut.fi!
not-for-mail@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <CnwEtI.4or@hpcvsnz.cv.hp.com>, <2o5u5p$uk@proffa.cc.tut.fi>,
<Co426M.Kwr@optilink.com>sun
Subject : Re: Cheap skate DDS

Paul Elliott (elliott@optilink.dsccc.com) wrote:

[Using the MSB of the phase accumulator in a DDS as the reference
frequency for a PLL frequency multiplier]

> The spectral distribution of the spurs in a DDS system can be pretty
> easily estimated. It helps to consider the DDS output as a sampled
> waveform -- usually a sinewave, but in Alvin's case (using the MSB
> of the phase word), it is as if he were sampling a squarewave with
> his DDS sample clock.

> ...

> In the proposed case of a squarewave, the spectrum is easy:
> All odd harmonics, dropping linearily with their order (the
> Fourier series for a square wave).

> Having determined the basic un-sampled spectrum, you then
> sample it and see what happens. This is a modulation process,
> just like a radio's local oscillator:

> . . .

> You have to apply a sinx/x correction to these modulation products as well.

I had a program for calculating high order IMD products in amplifiers
and mixers. I modified it a bit to handle the amplitude distribution
of the DDS output frequency harmonics and applied the sinx/x correction
to the spurs. Now it is easy to try out some interesting cases.

> Note that many of the higher-order harmonics, when sampled, will get
> folded back (aliased) into the frequency range of interest. When

> the sample clock is a multiple of the output frequency, the harmonics
> all fall at 0Hz or the desired output frequency, so they don't affect
> the spectral purity (as Tom mentions.)

On the other hand, if you stay away from these frequencies (at least a few kHz away from them), the spurs are distributed far away from the output frequency and no close-in spurs are present.

Assuming we need a synthesiser for the 144 - 148 MHz band with 1 Hz steps. If we use a PLL multiplier with a fixed by 100 multiplier, we need a DDS reference capable of producing 1.44 - 1.46 MHz in 0.01 Hz steps. A 29 bit DDS (MSB output only) clocked at about 5.369 MHz could do the job. I checked the whole tunning range, and I couldn't find any spurs (at least 20th order or less) in the range 1.2 - 1.8 MHz. A modest band-pass filter should be enough to prevent the PLL multiplier to lock on these spurs below 1.2 or above 1.8 MHz.

The PLL loop bandwidth would typically be a few kHz and as the closest spurs are at least 200 kHz from the reference frequency, it should be easy to filter it out in the PLL loop filter.

> So, in conclusion: What Tom said. Unless you have a carefully chosen
> frequencyratio, the high-order harmonics of the sampled square wave
> (the MSB) will sneak back and bite you.

Yes, this happened to me, when I tried to expand the tunning range to 1.4 - 1.5 MHz.

In Electronics World+Wireless World October 1992 on page 843 there is a similar system. The DDS is used for fine tunning on a very narrow band near 10 MHz and it is used as the reference for the PLL producing outputs in VHF or UHF. The PLL that has a variable multiplier for coarse tunning. As the multiplier is varied, the step size will also vary. If you need a constant step size across the whole VHF/UHF output range, a few more bits are required at the DDS and only those input words are used that approximate the required step size.

Paul OH3LWR

End of Ham-Homebrew Digest V94 #96
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